

CLAIMS

1. Cooling apparatus comprising a removable cryogenic refrigerator (4) and a thermal interface between the removable cryogenic refrigerator (4) and an article to be cooled by 5 the cryogenic refrigerator, wherein the thermal interface consists of a gas held in thermal contact with a cooling surface (9) of the refrigerator, within a closed recondensing chamber (12), and the article (10) is cooled by thermal conduction through a wall (10) of the closed recondensing chamber.

10 2. Cooling apparatus according to claim 1 wherein the cryogenic refrigerator is mounted within a sleeve (5), and the volume within the sleeve surrounding the refrigerator forms the closed recondensing chamber.

3. Cooling apparatus according to any preceding claim, wherein the gas condenses to a 15 liquid (12) on the cooling surface (9) and falls under gravity into contact with the wall (10) of the closed recondensing chamber.

4. Cooling apparatus according to any preceding claim wherein the wall (10) of the closed recondensing chamber is in thermal contact with a further recondensing chamber 20 (11), arranged for the recondensation of a cryogen gas and sealed from the closed recondensing chamber of the interface.

5. Cooling apparatus according to any preceding claim wherein the cooling surface (9) is provided with fins.

25

6. A cryostat comprising a cryogen vessel (1) containing a liquefied cryogen (16), and comprising a recondenser (11a) exposed to the interior of the cryogen vessel (1), the recondenser being connected for cooling by cooling apparatus according to any of claims 1- 5.

30

7. An MRI system comprising superconducting windings contained within a cryostat as claimed in claim 6.

8. A thermal interface, comprising a closed recondensing chamber (5) around a recondensing refrigerator (4) and in thermal contact with a component to be cooled through a wall (10) of the closed recondensing chamber, the closed recondensing chamber being filled with a gas which is recondensed into a liquid (12) by the recondensing refrigerator 5 whereby thermal contact between the recondensing refrigerator and the component is provided by recondensation of the gas and through the wall of the closed recondensing chamber.

9. A method for recondensing a cryogen gas (16) within a cryostat (1) comprising the 10 steps of :

- providing a recondensing surface (11a) exposed to the cryogen gas within the cryostat and arranged in thermal contact with a wall of a closed recondensing chamber of a thermal interface as recited in claim 8; and
- cooling the recondensing surface by cooling the component through the wall of the closed 15 recondensing chamber of the thermal interface.

10. Apparatus substantially as described, and/or as illustrated in Fig. 2 of the accompanying drawing.